CLAIMS:

1. A waterjet cutting system comprising:

(a) a storage assembly in which abrasive particulate material is retained, said storage assembly including an inlet for allowing the abrasive particulate material to flow therein, an outlet for allowing the abrasive particulate material to flow therefrom, and an inflatable diaphragm arranged at said outlet such that said inflatable diaphragm may be selectively inflated and deflated to control the flow of abrasive particulate material through said outlet, and

(b) a liquid supply source in communication with said storage assembly whereby said abrasive particulate material is mixed with a predetermined amount of liquid.

2. The waterjet cutting system of claim 1, further comprising a computer numeric control (CNC) system and a pressurized air supply source operatively connected to said inflatable diaphragm for selectively inflating and deflating said inflatable diaphragm.

3. The waterject cutting system of claim 2, further comprises an air regulator device operatively connected to said pressurized air supply source for regulating the pressure of air supplied to inflate the inflatable diaphragm.

4. The waterjet cutting system of claim 1, further comprising a nozzle connected to said liquid supply source such that said abrasive particulate material and liquid may be dispersed from said nozzle at a predetermined pressure.

5. The waterjet cutting system of claim 1, wherein said storage assembly further comprises an upper

housing, said upper housing retaining at least a portion of said outlet, and a lower housing connected to said upper housing, said upper and lower housing having a passageway therein for permitting abrasive particulate material to flow therethrough.

6. The waterjet cutting system of claim 5, wherein said storage assembly further comprises an over-inflation guard block connected to said upper housing and arranged at said outlet to prevent over expansion of said inflatable diaphragm.

7. The waterjet cutting system of claim 5, further comprising a regulation device arranged between said upper and lower housing, said regulation device being operable to regulate the amount of abrasive particulate material permitted to flow through said outlet.

8. The waterjet cutting system of claim 7, wherein said regulation device comprises a regulator orifice and a pivot pin, wherein said regulator orifice is rotatable about said pivot pin between predetermined limits to define full flow and no flow conditions.

9. An abrasive material delivery assembly for use with a waterjet cutting system, said abrasive material delivery assembly comprising: a storage assembly in which abrasive particulate material is retained, said storage assembly including an inlet for allowing the abrasive particulate material to flow therein, an outlet for allowing the abrasive particulate material to flow therefrom, and an inflatable diaphragm arranged at said outlet such that said inflatable diaphragm may be selectively inflated and deflated to control the flow of abrasive particulate material through said outlet.

10. The abrasive material delivery assembly of claim 9, further comprising a pressurized air supply source operatively connected to said inflatable diaphragm for selectively inflating and deflating said inflatable diaphragm.

11. The abrasive material delivery assembly of claim 10, wherein the CNC system further comprises an air regulator device operatively connected to said pressurized air supply source for regulating the pressure of air supplied to inflate the inflatable diaphragm.

12. The abrasive material delivery assembly of claim 9, wherein said storage assembly further comprises an upper housing, said upper housing retaining at least a portion of said outlet, and a lower housing connected to said upper housing, said upper and lower housing having a passageway therein for permitting abrasive particulate material to flow therethrough.

13. The abrasive material delivery assembly of claim 12, wherein said storage assembly further comprises an over-inflation guard block connected to said upper housing and arranged at said outlet to prevent over expansion of said inflatable diaphragm.

14. The abrasive material delivery assembly of claim 12, further comprising a regulation device arranged between said upper and lower housing, said regulation device being operable to regulate the amount of abrasive particulate material permitted to flow through said outlet.

15. The abrasive material delivery assembly of claim 14, wherein said regulation device comprises a regulator orifice and a pivot pin, wherein said

regulator orifice is rotatable about said pivot pin between predetermined limits to define full flow and no flow conditions.

16. The abrasive material delivery assembly of claim 9, wherein the storage assembly further compromises a vacuum break system, said vacuum break system comprising an air feed tube with a first end and a second end, said first end being attached to said outlet and said second end positioned within the storage assembly at a level above that of the abrasive particulate material, and a filter element in communication with the interior and exterior of the storage assembly for allowing atmospheric air to enter the storage assembly, said vacuum break system being operable to selectively reduce vacuum pressure at said outlet.

17. A method of controlling the flow of abrasive particulate material in a waterjet cutting system comprising the steps of:

retaining abrasive particulate material in a storage vessel;

selectively inflating a diaphragm arranged at an outlet of a storage vessel to preclude the abrasive particulate material from flowing therethrough;

selectively deflating the diaphragm to permit the abrasive particulate material to flow through the outlet;

mixing the abrasive particulate material with a liquid so that a desired ratio of abrasive particulate material to liquid is created; and

permitting the abrasive particulate material to flow with the liquid through a nozzle of the waterjet

cutting apparatus, thus creating an abrasive stream sufficient to abrade a target object.

18. The method of claim 17, wherein said step of selectively inflating the diaphragm is performed through the use of an air supply regulator assembly.

19. The method of claim 18, further comprising using a CNC system to control the air supply regulator assembly.

20. The method of claim 17, further comprising creating a vacuum environment with the storage vessel to facilitate the flow of the abrasive material through the outlet.